Appendix

Summary Description of Exemplary Claim Support

The following tables cite non-limiting examples of support in the specification for each term or phrase in each claim. Support for these claims may also be found elsewhere in the specification, as would be understood by one of skill in the art. Support for terms in a dependant claim is not provided if the terms are included in a claim upon which the claim depends.

12. An orthopedic preformed material for subsequent production of a medical implant with improved wear resistance, said preformed material is a polyethylene crosslinked by irradiation, and thermally treated according to the method selected from the group consisting of: annealing and remelting.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

13. The orthopedic preformed material of Claim 12, wherein said preformed material is crosslinked by gamma radiation at a dose from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

14. The orthopedic material of Claim 12, wherein said thermal treatment is remelting.

Word/Phrase	Support	
	Column	Line
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

15. The orthopedic material of Claim 12, wherein said thermal treatment is annealing.

Word/Phrase	Support	
	Column	Line
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

16. The orthopedic material of Claim 12, wherein said polyethylene is ultra high molecular weight polyethylene (UHMWPE).

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

17. A medical implant having a bearing surface with improved wear resistance, said bearing surface comprising a solid polyethylene which has been previously crosslinked by irradiation and subsequently remelted.

Word/Phrase	Support	
	Column	Line
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**
solid polyethylene	**1** **2**	**8 – 11** **43 - 46**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

18. The medical implant of Claim 17, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

19. The medical implant of Claim 18, wherein said polyethylene is crosslinked by gamma irradiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

20. The medical implant of Claim 19, wherein said polyethylene is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

21. The medical implant of Claim 17, where said polyethylene is remelted at a temperature from the melting temperature of the irradiated polyethylene to about 80° C above the melting temperature of the irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

22. The medical implant of Claim 17, wherein a layer of the crosslinked and remelted polyethylene is removed during processing into an implant.

Word/Phrase	Support	
	Column	Line
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**

23. The medical implant of Claim 17, wherein said implant is a component for use in a joint prosthesis.

Word/Phrase	Support	
	Column	Line
implant is a component for joint prosthesis	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

24. The medical implant of Claim 23, wherein said component is a bearing component.

Word/Phrase	Support	
	Column	Line
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**

25. The medical implant of Claim 24, wherein said joint prosthesis is selected from the group consisting of: hip and knee joint prostheses.

Word/Phrase	Support	
	Column	Line
hip and knee joint prostheses	**1** **7**	**25 - 28** **51 - 56**

26. The medical implant of Claim 25, wherein the implant is an acetabular cup.

Word/Phrase	Support	
	Column	Line
acetabular cup	**1** **7**	**32-35** **53-54**

27. A medical implant having a bearing surface with improved wear resistance, said bearing surface comprising a solid polyethylene which has been previously crosslinked by irradiation and subsequently annealed.

Word/Phrase	Support	
	Column	Line
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**
solid polyethylene	**1** **2**	**8 – 11** **43 - 46**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiation	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

28. A medical implant of Claim 27, wherein said polyethylene has been previously crosslinked by irradiation and subsequently heated to a temperature between about 50° C below the melting point of said irradiated polyethylene and the melting temperature of said irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

29. A medical implant of Claim 27, wherein said polyethylene has previously been crosslinked by irradiation and subsequently isothermally treated at a temperature of from about 100°C to about 130°C for a period of time from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
subjecting to isothermal treatment	**4**	**57 - 67**
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

30. The medical implant of Claim 27, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

31. The medical implant of Claim 27, wherein said polyethylene is crosslinked by gamma radiation of at least about 1MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

32. The medical implant of Claim 31, wherein said polyethylene is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

33. The medical implant of Claim 27, wherein a layer of the crosslinked and annealed polyethylene is removed during processing into an implant.

Word/Phrase	Support	
	Column	Line
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**

34. The medical implant of Claim 27, wherein said implant is a component for use in a joint prosthesis.

Word/Phrase	Support	
	Column	Line
implant is a component for joint prosthesis	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

35. The medical implant of Claim 34, wherein said component is a load-bearing component.

Word/Phrase	Support	
	Column	Line
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**

36. The medical implant of Claim 35, wherein said joint prosthesis is selected from the group consisting of: hip and knee joint prostheses.

Word/Phrase	Support	
	Column	Line
hip and knee joint prostheses	**1** **7**	**25 - 28** **51 - 56**

37. The medical implant of Claim 36, wherein the implant is an acetabular cup.

Word/Phrase	Support	
	Column	Line
acetabular cup	**1** **7**	**32-35** **53-54**

38. A method for increasing the wear resistance of a preformed polyethylene comprising the steps of:

(a) crosslinking said polyethylene by irradiating it in a solid state; and

(b) subjecting the crosslinked polyethylene to thermal treatment which is selected from the group consisting of: annealing and remelting.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

39. The method of Claim 38, wherein said crosslinking is by gamma irradiation.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**

40. The method of Claim 39, wherein the gamma irradiation is at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**

41. The method of Claim 40, wherein the gamma irradiation is at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

42. The method of Claim 38, wherein said thermal treatment comprises annealing the crosslinked preformed polyethylene.

Word/Phrase	Support	
	Column	Line
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

43. The method of Claim 38, wherein said thermal treatment comprises heating said polyethylene to a temperature between about 50° C below the melting temperature of said irradiated preformed polymer and about the melting temperature of said irradiated preformed polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

44. The method of Claim 38, wherein said thermal treatment comprises heating said polyethylene to a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

45. The method of Claim 38, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

46. A method for increasing the wear resistance of an orthopedic preformed polyethylene polymer, comprising the steps of:

(a) crosslinking the preformed polyethylene polymer by irradiating it in a solid state;

(b) subjecting the crosslinked preformed polymer to thermal treatment which is selected from the group consisting of: annealing and remelting; and

(c) removing the surface of the thermally treated crosslinked preformed polymer wherein said polymer is polyethylene.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**

47. The method of Claim 46, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

48. The method of Claim 46, wherein said polyethylene is crosslinked by gamma radiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

49. The method of Claim 48, wherein said polyethylene is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

50. The method of Claim 46, wherein said polyethylene is remelted at a temperature from the melting temperature of the irradiated polyethylene to about 80° C above the melting temperature of said irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

51. The method of Claim 46, wherein said polyethylene is heated to a temperature between about 50° C below the melting temperature of said irradiated preformed polyethylene below and the melting temperature of said irradiated preformed polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

52. The method of Claim 46, wherein said thermal treatment comprises heating said polyethylene to a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

53. A method for increasing the wear resistance of a preformed polymer, comprising the steps of:

(a) crosslinking said preformed polymer by irradiating it in its solid state; and

(b) remelting said crosslinked polymer, said polymer being polyethylene.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

54. The method of Claim 53, wherein said remelting temperature is between the melting temperature of the irradiated polymer to about 80° C above the melting temperature of said irradiated polymer.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

55. The method of Claim 53, wherein said preformed polymer is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

56. The method of Claim 53, wherein the preformed polymer is crosslinked by gamma radiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

57. The method of Claim 56, wherein the preformed polymer is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

58. A preformed polyethylene made according to a method comprising the steps of:

(a) crosslinking a starting polyethylene by irradiating it in a solid state to form a crosslinked polyethylene; and

(b) subjecting the crosslinked polyethylene to thermal treatment which is selected from the group consisting of: annealing and remelting;

wherein said preformed polyethylene has improved wear resistance over untreated polyethylene.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**

59. The preformed polyethylene of Claim 58, wherein said crosslinking is by gamma irradiation.

Word/Phrase	Support	
	Column	Line
gamma radiation	**3**	**27 - 32**

60. The preformed polyethylene of Claim 59, wherein said gamma irradiation is at a dose of from at least about 1 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**

61. The preformed polyethylene of Claim 60, wherein said gamma irradiation is at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

62. The preformed polyethylene of Claim 58, wherein said thermal treatment comprises annealing said crosslinked polyethylene.

Word/Phrase	Support	
	Column	Line
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

63. The preformed polyethylene of Claim 58, wherein said thermal treatment comprises heating said crosslinked polyethylene to a temperature between about 50° C below the melting point of said irradiated polyethylene and the melting temperature of said irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

64. The preformed polyethylene of Claim 58, whenever said thermal treatment comprises heating said polyethylene to a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
for a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

65. The method of Claim 58, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

66. A preformed polyethylene polymer made according to a method comprising the steps of:

(a) crosslinking a starting polyethylene polymer by irradiating in the presence of oxygen in a solid state to form a crosslinked polymer;

(b) subjecting said crosslinked polymer to thermal treatment selected from the group consisting of: annealing and remelting the crosslinked polymer; and

(c) removing the oxidized surface of the crosslinked polymer.

Word/Phrase	Support	
	Column	Line
a preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
irradiation in the presence of oxygen	**3**	**40 - 43**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**

67. The preformed polymer of Claim 66, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

68. The preformed polymer of Claim 67, wherein said crosslinking is by gamma irradiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

69. The preformed polymer of Claim 68, wherein said crosslinking is by gamma irradiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

70. A preformed polymer made according to the method comprising the steps of:

(a) crosslinking a starting polymer by irradiating it in a solid state to form a crosslinked polymer; and

(b) remelting the crosslinked polymer, wherein said polymer is polyethylene.

Word/Phrase	Support	
	Column	Line
preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

71. The preformed polymer of Claim 70, wherein the remelting temperature is between the melting temperature of the irradiated polymer to about 80° C above the melting temperature of the irradiated polymer.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

72. The preformed polymer of Claim 71, wherein said polymer is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

73. The preformed polymer of Claim 70, wherein said crosslinking is by gamma irradiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

74. The preformed polymer of Claim 73 wherein said crosslinking is by gamma irradiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

75. An implantable load bearing component made by the process comprising the steps of:

(a) crosslinking a preformed polyethylene in its solid state;

(b) subjecting the crosslinked polyethylene to thermal treatment selected from the group consisting of: annealing and remelting; and

(c) fashioning the implantable bearing component from the crosslinked and thermally treated polyethylene.

Word/Phrase	Support	
	Column	Line
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**
a preformed polyethylene material	**5** **7**	**4 - 8** **44 - 59**
crosslinking	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
processing/fashioning to form a component	**5** **7**	**4 - 13** **51 - 56**

76. The implantable bearing component of Claim 75, wherein said polyethylene is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

77. The implantable bearing component of Claim 75, wherein said polyethylene is crosslinked by gamma radiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

78. The implantable bearing component of Claim 77, wherein said polyethylene is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

79. The implantable bearing component of Claim 75, wherein said thermal treatment is remelting.

Word/Phrase	Support	
	Column	Line
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

80. The implantable bearing component of Claim 75, wherein said polyethylene is heated to a temperature between about 50° C below the melting temperature of said irradiated preformed polyethylene below and the melting temperature of said irradiated preformed polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

81. The implantable bearing component of Claim 75, wherein said polyethylene is isothermally treated at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
subjecting to isothermal treatment	**4**	**57 - 67**
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

82. The implantable bearing component of Claim 75, wherein the implantable bearing component is for use in a joint prosthesis.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

83. The implantable bearing component of Claim 82, wherein said joint prosthesis is selected from the group consisting of: hip and knee joint prostheses.

Word/Phrase	Support	
	Column	Line
hip and knee joint prostheses	**1** **7**	**25 - 28** **51 - 56**

84. The implantable bearing component of Claim 83, wherein the implantable bearing component is an acetabular cup.

Word/Phrase	Support	
	Column	Line
acetabular cup	**1** **7**	**32-35** **53-54**

85. A product made by the process comprising the steps of:

(a) crosslinking a preformed polymer by irradiating it in a solid state;

(b) subjecting the crosslinked polymer to thermal treatment selected from the group consisting of: annealing and remelting;

(c) removing the oxidized surface of the crosslinked polymer; and

(d) fashioning the product from the crosslinked and thermally treated polymer; wherein said polymer polyethylene.

Word/Phrase	Support	
	Column	Line
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**
processing/fashioning to form a component	**5** **7**	**4 - 13** **51 - 56**
polyethylene	**1** **2**	**8-11** **43-46**

86. The product of Claim 85, wherein said polymer is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

87. The product of Claim 85, wherein said polymer is crosslinked by gamma radiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

88. The product of Claim 87, wherein said polymer is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

89. The product of Claim 85, wherein said thermal treatment is remelting.

Word/Phrase	Support	
	Column	Line
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

90. The product of Claim 85, wherein said thermal treatment comprises annealing said crosslinked polyethylene.

Word/Phrase	Support	
	Column	Line
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

91. The product of Claim 85, wherein said thermal treatment comprises heating said crosslinked polyethylene to a temperature between about 50° C below the melting point of said irradiated polyethylene and the melting temperature of said irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

92. The product of Claim 85, wherein said thermal treatment comprises heating said polyethylene to a temperature from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

93. A medical implant having a bearing surface with improved wear resistance, said implant being made according to the process comprising the steps of:

(a) crosslinking a preformed polyethylene polymer by irradiating it in a solid state;

(b) subjecting the crosslinked polymer to thermal treatment selected from the group consisting of: annealing and remelting;

(c) removing the oxidized surface of the crosslinked polymer; and

(d) fashioning the implant from the crosslinked and thermally treated polymer.

Word/Phrase	Support	
	Column	Line
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
load bearing component/surface	**1** **7** **7**	**25 - 45** **44 - 59** **TABLE 2**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
crosslinking by irradiating	**2** **3** **4**	**47-52** **27 - 67** **1 – 3**
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**
removing the surface/layer of polymer	**5** **7**	**4 - 8** **44 - 56**
processing/fashioning to form a component	**5** **7**	**4 - 13** **51 - 56**

94. The medical implant of Claim 93, wherein said polymer is UHMWPE.

Word/Phrase	Support	
	Column	Line
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

95. The medical implant of Claim 94, wherein said polyethylene is crosslinked by gamma radiation at a dose of at least about 1 MR.

Word/Phrase	Support	
	Column	Line
gamma irradiation	**3**	**27 - 32**
1 MR	**5**	**46**

96. The medical implant of Claim 95, wherein said polyethylene is crosslinked by gamma radiation at a dose of from about 1 to about 5 MR.

Word/Phrase	Support	
	Column	Line
1 MR	**5**	**46**
5 MR	**3**	**62 - 65**

97. The medical implant of Claim 93, wherein said thermal treatment is remelting.

Word/Phrase	Support	
	Column	Line
thermally treated by remelting	**4** **5** **5**	**4 - 16** **25 - 31** **35 - 39**

98. The medical implant of Claim 93, wherein said thermal treatment comprises annealing said crosslinked polyethylene.

Word/Phrase	Support	
	Column	Line
thermally treated by annealing	**4** **4**	**4 - 9** **57 - 67**

99. The medical implant of Claim 93, wherein said thermal treatment comprises heating said crosslinked polyethylene to a temperature between about 50° C below the melting point of said irradiated polyethylene and the melting temperature of said irradiated polyethylene.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

100. The medical implant of Claim 93, wherein said thermal treatment comprises heating said crosslinked polyethylene to a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

101. The medical implant of Claim 93, wherein said medical implant is for use in a joint prosthesis.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

102. The medical implant of Claim 101, wherein said joint prosthesis is selected from the group consisting of: hip and knee joint prostheses.

Word/Phrase	Support	
	Column	Line
hip and knee joint prostheses	**1** **7**	**25 - 28** **51 - 56**

103. The medical implant of Claim 102, wherein the implant is an acetabular cup.

Word/Phrase	Support	
	Column	Line
acetabular cup	**1** **7**	**32-35** **53-54**

104. A method for making an ultrahigh molecular weight polyethylene (UHMWPE) article, for subsequent processing to make a medical implant, comprising:

(a) irradiating a raw article comprising UHMWPE; and

(b) heating said article to a temperature of from about 50° C below the melting point of said article to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**
irradiation/gamma radiation	**3**	**27 - 32**
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

105. A method according to Claim 104, wherein said heating is at a temperature between about 50° C below the melting point of said article and said melting point.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

106. A method according to Claim 105, wherein said heating is at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

107. A method according to Claim 104, wherein said heating is at a temperature from about said melting point to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

108. A method according to Claim 104, wherein said temperature is a compression deformable temperature.

Word/Phrase	Support	
	Column	Line
heated to a compression deformable temperature	**4**	**4 - 16**

109. A method according to Claim 108, wherein pressure is applied during said heating step.

Word/Phrase	Support	
	Column	Line
pressure is applied during heating step	**4** **4** **5** **5** **5**	**18 - 21** **34 – 44** **27 - 28** **35 - 37** **54 - 56**

110. A method according to Claim 109, wherein said article is isothermally heated after said pressure is applied.

Word/Phrase	Support	
	Column	Line
subjecting to isothermal treatment	**4**	**57 - 67**

111. A method according to Claim 110, wherein said isothermal treatment comprises heating said article to a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

112. An ultra high molecular weight polyethylene article made by the process of Claim 104.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 - 59**

113. An article according to Claim 112 having a wear factor of less than about 9.6×10^{-7}.

Word/Phrase	Support	
	Column	Line
wear factor of less than about 9.6×10^{-7}	**6** **7**	**49 - 53** **TABLE 1**

114. A method for making an ultra high molecular weight polyethylene (UHMWPE) article which is suitable for subsequent processing to make a medical implant, so as to improve the wear resistance properties of said article, comprising:

(a) irradiating a raw article comprising UHMWPE; and

(b) heating said article to a temperature of from about 50° C below the melting point of said article to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
improved wear resistance	**2** **2** **6** **7** **7**	**26 - 31** **58 - 62** **41 - -53** **44 - 50** **TABLE 1**
irradiation/gamma radiation	**3**	**27 - 32**
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

115. A method according to Claim 114, wherein said heating is at a temperature between about 50° C below the melting point of said article and said melting point.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

116. A method according to Claim 115, wherein said heating is at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

117. A method according to Claim 114, wherein said heating is at a temperature from about said melting point to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

118. A method according to Claim 114, wherein said temperature is a compression deformable temperature.

Word/Phrase	Support	
	Column	Line
heated to a compression deformable temperature	**4**	**4 - 16**

119. A method according to Claim 118, wherein pressure is applied during said heating step.

Word/Phrase	Support	
	Column	Line
pressure is applied during heating step	**4** **4** **5** **5** **5**	**18 - 21** **34 – 44** **27 - 28** **35 - 37** **54 - 56**

120. An UHMWPE article made by a process of Claim 114.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

121. An UHMWPE article according to Claim 120 having a wear factor of less than about 9.6×10^{-7}.

Word/Phrase	Support	
	Column	Line
wear factor of less than about 9.6×10^{-7}	**6** **7**	**49 - 53** **TABLE 1**

122. A method of making a component for an artificial joint comprising ultra high molecular weight polyethylene (UHMWPE), comprising:

(a) irradiating a raw article comprising UHMWPE;

(b) heating said article to a temperature of from about 50° C below the melting point of said article to about 80° C above said melting point; and

(c) processing said article to make said component.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**
irradiation/gamma radiation	**3**	**27 - 32**
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**
processing to form a component	**5** **7**	**4 - 13** **51 - 56**

123. A method according to Claim 122, wherein said heating is at a temperature between about 50° C below the melting point of said article and said melting point.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

124. A method according to Claim 123, wherein said heating is at a temperature of from about 100°C to about 130°C for a period of from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

125. A method according to Claim 122, wherein said heating is at a temperature from about said melting point to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

126. A method according to Claim 122, wherein said temperature is a compression deformable temperature.

Word/Phrase	Support	
	Column	Line
heated to a compression deformable temperature	**4**	**4 - 16**

127. A method according to Claim 126, wherein pressure is applied during said heating step.

Word/Phrase	Support	
	Column	Line
pressure is applied during heating step	**4** **4** **5** **5** **5**	**18 - 21** **34 – 44** **27 - 28** **35 - 37** **54 - 56**

128. A component for an artificial joint, wherein said component is made by a process according to Claim 122.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

129. A component for an artificial joint according to Claim 128, having a wear factor of less then about 9.6×10^{-7}.

Word/Phrase	Support	
	Column	Line
wear factor of less than about 9.6×10^{-7}	**6** **7**	**49 - 53** **TABLE 1**

130. A method for making an ultrahigh molecular weight polyethylene (UHMWPE) article, for subsequent processing to make a medical implant, comprising:

(a) irradiating a raw article comprising UHMWPE; and

(b) heating said article to a temperature of from about 100° C to about 130° C for a period of at least about 1 hour.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 – 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 – 46**
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**
irradiation/gamma radiation	**3**	**27 – 32**
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 – 60**
a period of at least one hour	**4**	**57 – 61**

131. A method according to Claim 130, wherein said heating step comprises heating said article for from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

132. A method according to Claim 130, wherein said article is cooled at a constant rate after said heating step.

Word/Phrase	Support	
	Column	Line
cooled at a constant rate	**4** **4**	**48 – 50** **65 - 67**

133. A method according to Claim 132, wherein said cooling is at a rate of about 1° C/minute.

Word/Phrase	Support	
	Column	Line
cooling is at a rate of about 1° C/minute	**4** **4**	**50** **65 - 67**

134. A method according to Claim 130, additionally comprising a step, prior to said heating step, comprising applying pressure to said irradiated article at a deformation temperature.

Word/Phrase	Support	
	Column	Line
subjected to pressure at a deformation temperature	**2** **3** **4**	**52 - 54** **16 – 20** **17 - 33**

135. A method according to Claim 134, wherein said deformation temperature is between about 50° C below the melting point of said article and said melting point.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

136. A method according to Claim 134, wherein said deformation temperature is from about said melting point to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

137. A UHMWPE article made by a process according to Claim 130.

Word/Phrase	Support	
	Column	Line
article	**1** **2** **3** **7**	**7 - 8** **43 - 67** **20** **45 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**

138. A UHMWPE article according to Claim 137 having a wear factor of less than about 9.6×10^{-7}.

Word/Phrase	Support	
	Column	Line
wear factor of less than about 9.6×10^{-7}	**6** **7**	**49 - 53** **TABLE 1**

139. A method of making a component for an artificial joint comprising ultrahigh molecular weight polyethylene (UHMWPE), comprising:

(a) irradiating a raw article comprising UHMWPE; and

(b) heating said article to a temperature of from about 100° C to about 130° C for a period of at least about 1 hour; and

(c) processing said article to make said component.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**
ultra high molecular weight polyethylene	**1** **2**	**8 – 11** **43 - 46**
irradiation/gamma radiation	**3**	**27 - 32**
heating to a temperature of 100°C to about 130°C	**4** **4**	**12 - 16** **57 - 60**
a period of at least one hour	**4**	**57 - 61**
processing to form a component	**5** **7**	**4 - 13** **51 - 56**

140. A method according to Claim 139, wherein said heating step comprises heating said article for from about 1 hour to about 20 hours.

Word/Phrase	Support	
	Column	Line
a period of from about 1 hour to about 20 hours.	**4**	**60 - 61**

141. A method according to Claim 139, wherein said article is cooled at a constant rate after said heating step.

Word/Phrase	Support	
	Column	Line
cooled at a constant rate	**4** **4**	**48 – 50** **65 - 67**

142. A method according to Claim 141, wherein said cooling is at a rate of about 1° C/minute.

Word/Phrase	Support	
	Column	Line
cooling is at a rate of about 1° C/minute	**4** **4**	**50** **65 - 67**

143. A method according to Claim 139, additionally comprising a step, prior to said heating step, comprising applying pressure to said irradiated article at a deformation temperature.

Word/Phrase	Support	
	Column	Line
subjected to pressure at a deformation temperature	**2** **3** **4**	**52 - 54** **16 – 20** **17 - 33**

144. A method according to Claim 143, wherein said deformation temperature is between about 50° C below the melting point of said article and said melting point.

Word/Phrase	Support	
	Column	Line
heated to from about 50°C lower than the melting temperature to the melting temperature	**4**	**5 – 9**

145. A method according to Claim 143, wherein said deformation temperature is from about said melting point to about 80° C above said melting point.

Word/Phrase	Support	
	Column	Line
heating to from the melting temperature to about 80° C higher than melting temperature	**4**	**5 - 9**

146. A component for a medical implant made by a process according to Claim 139.

Word/Phrase	Support	
	Column	Line
medical implant	**1** **2** **7**	**13 - 32** **43-46** **44-56**

147. A component for a joint prosthetic device according to Claim 146.

Word/Phrase	Support	
	Column	Line
component for joint prosthetic device	**1** **2** **7**	**13 - 32** **43 - 46** **44 - 59**

148. A component for an artificial joint according to Claim 146 having a wear factor of less than about 9.6×10^{-7}.

Word/Phrase	Support	
	Column	Line
artificial joint component for implantation in a human or animal	**1** **2** **7**	**13 - 32** **43 - 46** **44 – 59**
wear factor of less than about 9.6×10^{-7}	**6** **7**	**49 - 53** **TABLE 1**